Anchor Section and event value. Several methods exist for storing these values, and it would be apparent to one skilled in the art that the exact method chosen will depend on other implementation and design choices. For instance, any of the following methods may be implemented: (a) storing each value-Anchored Linear Event

5   combination in a different table record, (b) storing each value-Anchor Section combination in a different table record with a Blob (binary large object) column that contains the offset information for the Anchored Linear Event(s), (c) storing all event values (for a specific event type) for each Anchor Section in a different record with a Blob column that contains the value that applies to each Anchored Linear Event, and

10   (d) storing each Value-Anchored Linear Event combination in a different table record with the same Anchored Linear Events being used for all TIS event data (i.e., dynamic segmentation).

[0075]   Saving a new event value can result in complicated updates to the current TIS database (see Figure 1). For example, referring to Figure 8, suppose the

15   pavement type currently has value X 81 along an entire Anchor Section 71, and a new value Y 82 is entered from offset 30% to offset 50%. Then the new value is X from offset 0% to 30% (reference 83), Y from offset 30% to 50% (reference 84), and X from offset 50% to 100% (reference 85). Using Method (a), above, this would be stored in three (3) event table rows, one for each Anchored Linear Event. Using

20   Method (b), this would be stored in two (2) event table rows, one for each event value. Using Method (c), this would be stored in one (1) event table row. The number of rows required using Method (d) would depend on the current segmentation for the

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given Anchor Section, and it is possible that event tables for every event associated with this Anchor Section would require updating.

[0076]   The method used to store the event values has a significant impact on the use of queries to access the TIS data. Methods (a), (b), and (d) support simple queries based on a single event attribute. (Method (c) does not because the event value is "hidden" inside the Blob.) Only Method (d) supports simple queries for multiple event attributes; the other methods require implementing some program logic to calculate the intersection and/or union of the Anchored Linear Events associated to the event values of interest.

[0077]   Many of the reports required of the TIS data by GDOT are summaries of event data by jurisdictional area (e.g., county, congressional district). TIS provides two methods of accessing event data by jurisdictional area, both of which are depicted in Figure 10.

[0078]   Referring now to Figure 10, jurisdictional area polygons 1000 are maintained as spatial TIS data 1001. The user can also create temporary, ad hoc spatial jurisdictional areas for use in querying the TIS data. Event data 1010 for such areas will be accessed by (1) using a spatial query 1002 to identify the Anchor Sections contained within the specified jurisdictional area 1003, (2) using a relational query 1004 to compile the event data for those Anchor Sections 1005, and (3) using a report or summary query 1006 to summarize the Anchor Section event data 1007.

[0079]   Event tables are used to store the Anchor Sections associated with the most important jurisdictional areas. These event tables facilitate processing by storing

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the pre-processed result of the spatial query in step 1 above. Event data 1010 for such areas are accessed by applying steps 2 and 3 from above to the stored Anchor Sections for the jurisdictional area.

[0080]   Modifications of existing ArcInfo applications are used to maintain the

5   jurisdictional data, which will be exported to the TIS database as part of ArcInfo data publication.

[0081]   In addition to TIS data tied directly to the road network and jurisdictional areas, TIS maintains links to other data that include a spatial component. For example, bridge information management system (BIMS, as implemented in the

10   GDOT system) software maintains information about bridges; TIS includes links to this information. In particular, TIS supports the following sorts of spatial links to other data:

1. Some data is associated with a location on the road network (e.g., a bridge "covers" a portion of a road), then TIS includes the following types of

15   information: (a) a table that describes the object/information, how to link to the source data for this object, and includes spatial data for the object (i.e., a GIS layer) and (b) an event-like table that relates each bridge to the portion of roadway that it covers. The data is accessible both through (a) a GIS map interface, (b) spatial queries, and (c) relational Anchor Section based queries.

20   2. Other data is not directly associated with a location on the road network (e.g., wetlands), in which case TIS includes a table that describes the

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